Appendix 2-E

SCS SOIL SURVEY

SOIL SURVEY AND INTERPRETATIONS
VEGETATION SURVEY
for
CO-OP MINING CO.
Huntington Canyon
March 1980

Earl Jensen, Soil Scientist, SCS
George Cook, Range Conservationist, SCS
Gary Moreau, District Conservationist, SCS

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CO-OP MINING CO.

At the request of Wendell Owen, representing CO-OP Mining Co., and the San Rafael Soil Conservation District, the Soil Conservation Service performed a soil and vegetation survey on proposed mine property in Huntington Canyon. The surveys were designed to comply with the March 1979 Permanent Regulatory Program Requirements of the office of Surface Mining Reclamation and Enforcement, Department of Interior.

The survey covers approximately 23 acres on Bear Creek in Huntington Canyon, Emery County, Section 25, T16S, R7E, SLBM. The soils are shown on the attached map. Each soil is identified with a three letter symbol, and the pattern and extent are shown by the soil boundary lines on the map. It should be noted that the entire survey area had been disturbed from previous mining activities. Therefore, the soil characteristics were projected from the surrounding areas. All areas having the same symbol are essentially the same kind of soils. There may be small areas of other soils included within the delineation that are slightly different. The soils are named but have not been correlated. When the overall county survey is completed, small areas may become inclusions in other map units. Some names may change also. Included at the end of the report are the engineering uses and interpretations of the soils. The soil horizonation symbols, procedures, and nomenclature are as defined in the Soil Survey Manual (Ag. Handbook No. 18), National Soil Handbook of the Soil Conservation Service, and Soil Taxonomy.

SCS range conservationist, George Cook, visited each described soil in the survey area in November and recorded present vegetation and productivity according to ecological site analysis methods of the Soil Conservation Service. Present vegetation was recorded by percentage air dry weight. Estimates were made of annual production and range condition for the 1980 growing season. These findings are included in this report and the ecological sites identified on the soil map accompanying the soil report.

Most of the soils in the survey area are used as rangeland and wildlife habitat except where mine disturbances have occurred. On areas that have similar climate and topography, the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between soils and vegetation and water.

In this survey area the soils are grouped into ecological sites. An ecological site is an area or areas of rangeland or woodland uniform enough in climate, soils, drainage, exposures and topography that it supports a definite plant community that will produce a specific amount of vegetation. The kind of vegetation is generally the combination of plants that grew on the site before the range or woodland was affected by grazing, cultivation or otherwise altered and is called the potential vegetation. Normally the potential vegetation is the most productive combination of range or woodland plants that a site can support. Potential plant communities for the Bear Creek Canyon area obtained from clipping data, is not yet available from the Bureau of Land Management. As climate is a major factor in determining the potential plant community different climatic regime have been defined to facilitate the grouping of soils into ecological sites and the naming of sites. In this survey area there are two climatic regimes used. These are defined generally as follows:

Upland Climatic Regime - The average annual precipitation is 12 to 16 inches. Approximately 35 to 40 percent comes during the summer months. The growing period usually begins about April 1 and lasts until the first of November until moisture is depleted or the plants mature. The freeze-free season is 100 to 130 days, and the mean annual temperature is 47° to 50° F.

Mountain Climatic Regime - The average annual precipitation is 16 to 20 inches. Approximately 35 percent comes during the summer months. The growing season begins in the later part of April and lasts until the middle of October or until moisture is depleted or the plants mature. The freeze-free season is 80 to 110 days and the mean annual temperature is 44° to 47° F.

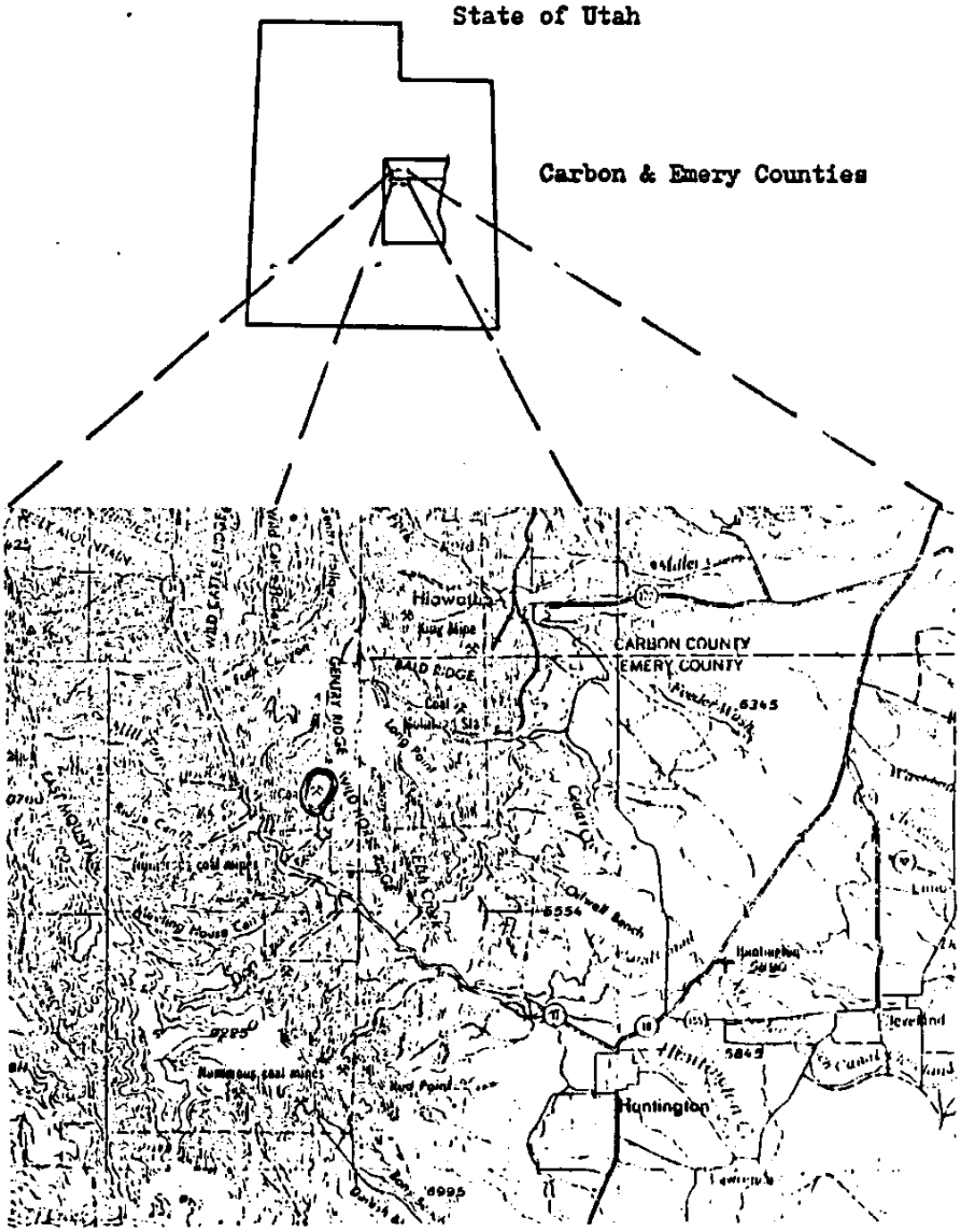
Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the exisitng community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community in a given use.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site.

Such management generally results in the optimum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

More detailed information is available in the Price Field Office of the Soil Conservation Service.

LOCATION MAP
FOR
Soil Survey
of
CO-OP Mining Co.
Bear Canyon Area



Survey Area Circled

SOIL LEGEND

Soil Symbol	Soil Mapping Unit Name
D2E	Datino bouldery fine sandy loam, 5 to 20 percent slopes
D1G	Datino very stony fine sandy loam, 55 to 70 percent slopes

DESCRIPTION OF THE SOILS

D2E Datino bouldery fine sandy loam, 5 to 20 percent slopes.

This Datino soil is very deep and well drained. It occurs on moderately steep alluvial fans and some sloping flood plains at elevations of 7,100 to 7,140 feet (2,165 to 2,177 meters). This soil formed in alluvium and colluvium derived mainly from sandstone and shale. The average annual precipitation is 14 to 16 inches (36 to 41 centimeters). Mean annual air temperature is 42 to 45 degrees F. (5 to 7 degrees C.), mean annual soil temperature is 44 to 47 degrees F. (6 to 8 degrees C.), and the average freeze-free season is about 80 to 110 days.

Slopes are 5 to 20 percent and mostly east facing. They are short and concave-convex.

Vegetation is dominantly pinyon, Utah juniper, salina wildrye, squirreltail, big sagebrush, Douglas-fir, and Rocky Mountain juniper.

Included in mapping are small areas of a similar soil except with 20 percent gravel and cobbles in the surface layer.

In a typical profile the surface layer is brown, bouldery fine sandy loam and cobbly loam about 10 inches (25 centimeters) thick. The subsoil is light brown very stony loam about 28 inches (71 centimeters) thick. The substratum is light reddish brown cobbly fine sandy loam to a depth of 60 inches (1.5 meters) or more.

Permeability is moderate. Available water capacity is 6 inches (15 centimeters) to a depth of 60 inches (1.5 meters). Organic matter content in the surface layer is 4 percent. Effective rooting depth is about 60 inches (1.5 meters). Surface runoff is medium and erosion hazard is moderate under potential native vegetation and high if vegetation is removed and the soil is left bare. Erodibility is low. This soil is used for range, wildlife habitat, and mining operations.

Taxonomic classification is loamy-skeletal, mixed Typic Haploboralls.

A typical pedon of Datino bouldery fine sandy loam, 5 to 20 percent was described on the cut about 200 feet east and 1100 feet south of the NW corner of Section 25, T16S, R7E.

A11 -- 0 to 2 inches (0 to 5 centimeters) brown (10YR 5/3) bouldery fine sandy loam, dark brown (10YR 3/3) when moist; moderate fine granular structure; loose, very friable, slightly sticky, nonplastic; common very fine to medium, few coarse roots; 10 percent boulders, 10 percent stones, 5 percent cobbles, 10 percent gravel; slightly calcareous; moderately alkaline (8.0); abrupt smooth boundary.

A12 -- 2 to 10 inches (5 to 25 centimeters); brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) when moist; moderate medium granular structure; soft, friable, slightly sticky, slightly plastic; common very fine to medium, few coarse roots; 10 percent cobble and 10 percent gravel; moderately calcareous; moderately alkaline (ph 8.2); clear smooth boundary.

B2 -- 10 to 38 inches (25 to 96 centimeters); light brown 7.5YR 6/4) very stony loam, brown (7.5YR 4/4) when moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine to medium roots; 1 percent boulders, 30 percent stone, 10 percent cobbles, 20 percent gravel; moderately calcareous; strongly alkaline (ph 8.5); abrupt wavy boundary.

C1 -- 38 to 60 inches (96 to 152 centimeters) light reddish brown (5YR 6/4) cobbly fine sandy loam, reddish brown (5YR 4/4) when moist; massive; soft, very friable, slightly sticky, nonplastic; few very fine and fine roots; 10 percent cobbles, 5 percent gravel; strongly calcareous; strongly alkaline (ph 8.6).

DIG Datino - Rock outcrop complex, 55 to 70 percent slopes.

This map unit is on very steep canyon sideslopes. Slopes are short and concave-convex, Elevation is 7,140 to 7,600 feet (2,177 to 2,318 meters). The average annual precipitation is 14 to 16 inches (36 to 41 centimeters). Mean annual air temperature is 42 to 44 degrees F. (6 to 7 degrees C.) and the average frost-freeze season is 80 to 110 degrees.

This unit is 75 percent Datino very stony fine sandy loam, 55 to 70 percent slopes in single and concave areas and 15 percent rock outcrop on ridges.

Included in this unit is about 10 percent of a shallow soil that is about 6 to 15 inches in depth, associated with the Rock outcrop.

The Datino soil is very deep and well drained. This soil formed in colluvium derived mainly from sandstone and shale. Slopes are 55 to 70 percent and east facing. They are short and concave-convex. Vegetation is dominantly pinyon, Utah juniper, Rocky Mountain juniper, salina wildrye, Douglas-fir, curlleaf mountainmahogany.

In a typical profile the surface layer is brown or yellowish brown, very stony fine sandy loam about 16 inches (41 centimeters) thick. The subsoil is very pale brown, very stony sandy clay loam about 20 inches (51 centimeters) thick. The substratum is very pale brown, very stony silty clay loam to a depth of more than 60 inches (152 centimeters).

Permeability is moderate to 36 inches (91 centimeters) and moderately slow below 36 inches. Available water capacity is 6.5 inches (16 centimeters) to a depth of 60 inches (1.5 meters). Organic matter content in the surface layer is about 4 percent. Effective rooting depth is about 60 inches (1.5 meters). Surface runoff is rapid and erosion hazard is high under potential native vegetation and very high if vegetation is removed and the soil is left bare. Erodibility is low. This soil is used for range, wildlife habitat, and mining operation.

Taxonomic classification is loamy-skeletal, mixed Typic Haploboralls.

A typical pedon of Datino very stony fine sandy loam, 55 to 70 percent slopes was described on the bank about 150 feet north of the old mine portal about 300 feet north and 300 feet east of the SW corner of Section 24, T16S, R7E.

A11 -- 0 to 3 inches (0 to 8 centimeters); brown (10YR 5/3) very stony fine sandy loam, dark brown (10YR 3/3) when moist; moderate fine granular structure; soft, very friable, nonsticky, nonplastic; many very fine, few medium and course roots; moderately calcareous; moderately alkaline (ph 8.4); abrupt smooth boundary.

A12 -- 3 to 16 inches (8 to 41 centimeters); yellowish brown (10YR 5/4) stony fine sandy loam, dark brown (10YR 3/3) when moist; weak medium granular structure; soft, friable, nonsticky, nonplastic; many very fine and fine, few medium and coarse roots; 2 percent boulders, 10 percent stones, 10 percent cobbles, 10 percent gravel; moderately calcareous; moderately alkaline (ph 8.4); clear smooth boundary.

B2 -- 16 to 36 inches (41 to 91 centimeters) very pale brown (10YR 7/3) very stony sandy clay loam, pale brown (10YR 6/3) when moist; weak medium subangular blocky structure; slightly hard, firm, slightly sticky, plastic; common very fine and fine roots; many fine pores; 2 percent boulders, 15 percent stones, 15 percent cobbles, 10 percent gravel; moderately calcareous; strongly alkaline (ph 8.6); abrupt wavy boundary.

C1 -- 36 to 60 inches (91 to 152 centimeters) very pale brown (10YR 8/4) stony silty clay loam, light yellowish brown (10YR 6/4) when moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky plastic; few very fine and fine roots, common fine pores; 2 percent boulders, 10 percent stones, 10 percent cobbles, 5 percent gravel; strongly calcareous; strongly alkaline (ph 8.9).

DESCRIPTION OF PRESENT VEGETATION

Upland Stony Loam (Pinyon-Juniper) Ecological Site

Two inventories of the Upland stony loam (P-J) ecological sites in the Bear Canyon area recorded the following vegetation as a percentage of air dry weight:

1) Pit 1, SW¼, Sec. 24, T16S, R7E. This site relates to the D1G soil.

2) Pit 2, NW¼, Sec. 25. T16S, R7E. This site relates to the D2E soil.

	Percent	
Grass and Grass-like Plants	Pit 1	Pit 2
Indian ricegrass	5	5
Salina wildrye	25	10
Squirreltail		10
Sedge		2
Needleandthread		2
Muttongrass	T	1
Forbs		
Buckwheat	1	
Mustard	1	2
Aster	1	2
Other	2	2
Crytantha		2
Stickseed		2
Trees and Shrubs		
Rubber rabbitbrush		5
White fir	5	
Douglas fir	5	5
Pinyon pine	30	25
Juniper	10	10
Rocky Mountain juniper	10	5
Curlleaf mountainmahogany	5	
Big sagebrush		5
Elderberry		5
Total annual Production (estimated in pounds/acre)	900	1500
Ecological rating	Good	Good

Notes: Inventories were completed in November, 1980, making forb identification very difficult. The vicinity of Pit 2 appeared to have been burned in early 1900's. These sites were in a transition zone between upland and mountain climates.

Nov. 1990

SOIL LEGEND

Soil Symbol	Soil Mapping Unit Name
DZE	Datino-Sheepcan-Winetti bouldery loams, 5 to 20 percent slopes
PDR	Podo-Latino-Rock outcrop complex, 40 to 70 percent slopes
TR	Travessilla - Rock out crop - Strych complex

DESCRIPTION OF THE SOILS

DZE - Datino - Sheepcan - Winetti bouldery loams, 5 to 20 percent slopes.

These soils are very deep and well drained. They occur in alluvial valleys and on some moderately sloping toe slopes at elevations of 7,000 to 7,340 feet. These soils formed in alluvium and colluvium derived mainly from sandstone, limestone and shale. The average annual precipitation is 14 to 16 inches. Mean annual soil temperature is 44 to 47 degrees F., and the average freeze-free season is about 80 to 110 days.

Slopes are 5 to 20 percent, and are short and concave to convex.

This map unit is about 55 percent Datino bouldery loam, about 20 percent Sheepcan bouldery loam, these soils are on toe slopes and on the more stable areas of the valley floor, and about 15 percent Winetti bouldery loam on the stream banks and near stream channels. Also included in this mapping unit are about 10 percent other soils and land areas including the Strych soil, rubbleland, some areas of bedrock, and areas of man made fill or disturbed areas.

Vegetation is dominantly pinyon, Utah juniper, salina wildrye, squirreltail, big sagebrush, Douglas-fir, and Rocky Mountain juniper.

Also included in mapping are small areas of similar soils except with 20 percent gravel and cobbles in the surface layer.

In a typical profile of Datino bouldery loam, the surface layer is brown, bouldery loam about 4 inches thick. The upper subsoil is light brown cobbly loam about 7 inches thick. The lower subsoil is pink very gravelly sandy loam

and very gravelly loam to 56 inches. The substratum is reddish yellow, and light yellowish brown gravelly loam and very gravelly sandy loam to a depth of 80 inches or more.

In a typical pedon of Sheepcan bouldery loam, the surface layer is grayish brown bouldery loam about 5 inches thick. The subsoil is pale brown loam about 11 inches thick. The substratum is light yellowish brown gravelly and very cobbly loam to 60 inches.

In a typical pedon of Winetti bouldery loam, the soil has a very thin surface layer about 1 inch thick or this soil may lack any topsoil. If present the surface layer typically is pale brown bouldery loam. The substratum is stratified bouldery sandy loam, loamy sand or loam to 60 inches.

Permeability of these soils is moderate. Available water capacity is 5 to 8 iunches to a depth of 60 inches. Organic matter content in the surface layer of the Datino and Sheepcans soils are about 3 to 4 percent. Effective rooting depth is about 60 inches. Surface runoff is medium and erosion hazard is moderate under potential native vegetation and high if vegetation is removed and the soil is left bare. The Winetti soils are subject to flooding during heavy rain or snowmelt events. These soils are used for range, wildlife habitat, and mining operations.

Taxonomic classification of Datino is loamy skelatal, mixed Typic Haplo borolls.

A typical pedon of Datino bouldery loam, 5 to 20 percent slopes, described on a cut about 800 feet east and 1000 feet south of the northwest cornet of section 25 T16S.R7E.

A1 -- 0 to 5 inches; brown (10YR 5/3) bouldery loam, very dark grayish brown (10YR 3/2) when moist; weak fine granular structure; soft, very friable, slightly sticky, slightly plastic; many very fine, common fine, medium and few coarse roots; 5 percent boulders, 10 percent cobbles and 20 percent gravel; mildly alkaline (pH 7.8); abrupt wavy boundary.

BW -- 5 to 11 incher; lightr brown (7.5YR 6/4) very cobbly sandy loam; brown (7.5YR 5/4) when moist; weak fine subangular blocky structure; soft, very friable, slightly sticky, slightly plastic; common very fine, fine, medium and few coarse roots; 1 percent stones, 15 percent cobbles, 30 percent gravel; slightly calcareous; moderately alkaline (pH 8.0); clear wavy boundary.

BK2 -- 34 to 56 inches; pink (7.5YR 7/4) very gravelly loam; reddish yellow (7.5YR 6/6) moist: massive: slightly hard, friable, slightly sticky, slightly plastic; common very fine, fine, few medium and coarse roots; 1 percent stones, 15 percent cobbles and 45 percent gravel; violently

calcareous; moderately alkaline (pH 8.4); abrupt smooth boundary.

C! -- 56 to 64 inches; light yellowish brown (10YR 6/4) gravelly loam; brown (7.5 YR 5/4) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; common very fine, fine and few medium roots; 2 percent cobbles, 20 percent gravel; moderately calcareous; moderately alkaline (pH 8.4); clear wavy boundary.

C2 -- 64 to 80 inches; reddish yellow (7.5YR 7/6) very gravelly sandy loam, strong brown (7.5YR 5/6) moist; single grained; loose, nonsticky, nonplastic; few very fine roots; 1 percent stones, 5 percent cobbles, 50 percent gravel; moderately calcareous; moderately alkaline (pH 8.4).

Taxonomic classification of Sheepcan is Fine-loamy, mixed (Calcareous), frigid Typic Ustorthents.

A typical pedon of Sheepcan bouldery loam, 5 to 20 percent slopes, described about 700 feet east 1100 feet south of the northwest corner of section 25 T16S.R7E.

A -- 0 to 5 inches; grayish brown (10YR 5/2) bouldery loam; very dark grayish brown (10YR 3/2) moist: moderate medium granular structure; soft, very friable, slightly sticky, slightly plastic; many very fine, fine, common medium and coarse roots; 5 percent boulders, 5 percent cobbles, 15 percent gravel; slightly calcareous; moderately alkaline (pH 8.0; abrupt smooth boundry.

BW -- 5 to 16 inches; pale brown (10YR 6/3) loam; dark yellowish brown (10YR 4/4) moist; weak medium subangular block, structure; slightly hard, friable, slightly sticky, plastic; common very fine, fine, medium and coarse roots; 2 percent cobbles, 10 percent gravel; slightly calcareous; moderately alkaline (pH 8.0) clear smooth boundary.

C1 -- 16 to 30 inches; light yellowish brown (10YR 6/4) gravelly loam; yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky, slightly plastic; common very fine, fine, few medium and coarse roots; 5 percent cobbles, 15 percent gravel; moderately calcareous; moderately alkaline (pH 8.2); slear wavy boundary.

C2 -- 30 to 60 inches; light yellowish brown (10YR 6/4) very cobbly loam; light olive brown (2.5Y 5/4) moist; slightly hard, friable, slightly sticky, slightly plastic; ommon very fine, few fine and medium roots; 2 percent stones, 15 percent cobbles, 20 percent gravel; moderately calcareous; moderately alkaline.

Taxonomic classification of Winetti is Loamy-skelatal, mixed (calcareous), frigid, Typic Ustifluvents.

No typical pedon of Winetti bouldery loam was fully described because this soil is so variable. In the profiles examined typically there may or may not be an A horizon underlain by recent alluvium which is stratified. In one profile examined in the stream bank about 500 feet south of the mine office.

A -- 0 to 1 inch; pale brown (10YR 6/3) bouldery loam; brown (10YR 4.3) moist; moderate thin platy structure; slightly hard; very friable; slightly sticky, slightly plastic; common very fine and fine roots; 8 percent boulders, 25 percent cobbles, 20 percent gravel; mildly alkaline (pH 7.8); abrupt smooth boundary.

C -- 1 to 60 inches; stratified multicolored recent alluvium rangeing in texture from cobbly or bouldery loamy sand to very gravelly sandy loam; single grained; loose, nonsticky, nonplastic; moderately calcareous, moderately alkaline (pH 8.2).

PDR Podo - Datino - Rock outcrop complex, 40 to 70 percent slopes.

This map unit is on very steep canyon sideslopes. Slopes are short and concave to convex, Elevation is 7,000 to 8,000 feet. The average annual precipitation is 14 to 16 inches. Mean annual air temperature is 42 to 44 degrees F. and the average frost-freeze season is 80 to 110 days.

This unit is 35 percent Podo very stony fine sandy loam on mountainside slopes, 35 percent Datino very stony fine sandy loam, 55 to 70 percent slopes on toe slopes and in concave areas and 20 percent rock outcrop on ridges.

Included in this unit are about 10 percent Strych, Travessillia and Sheepcan soils.

The Podo soil is shallow over sandstone and limestone bedrock, and it is well drained. The soil formed in residuum and colluvium from sandstone and limestone. Slopes are 50 to 70 percent and generally convex. Vegetation is dominantly pinyon pine, Utah juniper, bitter brush, curlleaf mountain mahogany, Douglas fir, salina wildrye, Indian ricegrass and Rocky Mountain juniper.

In a typical profile the surface layer is brown very stony fine sandy loam about 3 inches thick. The substratum is light yellowish brown stony sandy loam over sandstone bedrock at 12 inches.

Permeability is moderately rapid, available water capacity is very low, about .75 to 1 inch. Organic matter content in the surface is low. Surface runoff is rapid and erosion hazard is very high. This soil is used for range, wildlife habitat, and mining operations.

Taxonomic classification is loamy, mixed (calcareous), frigid, Lithic Ustorthents.

A typical pedon of Podo very stony fine sandy loam, 40 to 70 percent slopes described on a mountain slope 1000ft east and 1200ft south of the northwest corner of Section 25, T16S, R7E.

A1 -- 0 to 3 inches; brown (10YR 5/3) stony fine sandy loam, dark brown (10YR 3/3) when moist; weak fine granular structure; soft, very friable, slightly sticky, slightly plastic; 10 percent stones, 10 percent cobbles, 20 percent gravel; many fine, few medium and coarse roots; slightly calcareous; mildly alkaline (pH 7.8); abrupt wavy boundary.

C -- 3 to 12 inches, light yellowish brown stoney sandy loam, brown (10YR 4/3) when moist; weak fine subangular blocky structure; slightly hard; very friable; slightly sticky, slightly plastic; 10 percent stones, 5 percent cobbles, 10 percent gravels; common fine, few medium and coarse roots; moderately calcareous; moderately alkaline (pH 8.0); abrupt irregular boundary.

The Datino soil is deep to very deep and well drained. This soil formed in colluvium derived mainly from sandstone and shale. Slopes are 40 to 60 percent and northeast to northwest facing. They are short and generally concave but may be convex on the toeslopes. Vegetation is dominantly pinyon pine, Utah juniper, Rocky Mountain juniper, salina wildrye, Douglas-fir, curlleaf mountain mahogany.

In a typical profile the surface layer is brown or yellowish brown, very stony fine sandy loam about 16 inches thick. The subsoil is very pale brown, very stony silty clay loam to a depth of 36 inches and the substratum is very pale brown stony silty clay loam to more than 60 inches.

Permeability is moderate to 36 inches. Available water capacity is 6.5 inches to a depth of 60 inches. Organic matter content in the surface layer is about 4 percent. Effective rooting depth is about 60 inches. Surface runoff is rapid and erosion hazard is high under native vegetation and very high if vegetation is removed and the soil is left bare. This soil is used for range, wildlife habitat, and mining operation.

Taxonomic classification is loamy-skeletal, mixed Typic Haploborolls.

A typical pedon of Datino very stony fine sandy loam, 40 to 70 percent slopes described on the bank about 150 feet north of the old mine portal about 300 feet north and 300 feet east of the SW corner of Section 24, T16S, R7E.

A1 -- 0 to 3 inches; brown (10YR 5/3) very stony fine sandy loam, dark brown (10YR 3/3) when moist; moderate fine granular structure; soft, very friable, nonsticky, nonplastic; many very fine, few medium and course roots; moderately calcareous; moderately alkaline (pH 8.4); abrupt smooth boundary.

A2 -- 3 to 16 inches; yellowish brown (10YR 5/4) stony fine sandy loam, dark brown (10YR 3/3) when moist; weak medium granular structure; soft, friable, nonsticky, nonplastic; many very fine and fine, few medium and coarse roots; 2 percent boulders, 10 percent stones, 10 percent cobbles, 10 percent gravel; moderately calcareous; moderately alkaline (pH 8.4); clear smooth boundary.

B -- 16 to 36 inches very pale brown (10YR 7/3) very stony sandy clay loam, pale brown (10YR 6/3) when moist; weak medium subangular blocky structure; slightly hard, firm, slightly sticky, plastic; common very fine and fine roots; many fine pores; 2 percent boulders, 15 percent stones, 15 percent cobbles, 10 percent gravel; moderately calcareous; strongly alkaline (pH 8.6); abrupt wavy boundary.

C -- 36 to 60 inches very pale brown (10YR 8/4) stony silty clay loam, light yellowish brown (10YR 6/4) when moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky plastic; few very fine and fine roots, common fine pores; 2 percent boulders, 10 percent stones, 10 percent cobbles, 5 percent gravel; strongly calcareous; strongly alkaline (pH 8.9).

Rock outcrop is exposed sandstone and limestone.

TR - Travessilla - Rock outcrop - Strych complex, 50 to 70 percent slopes.

These soils are very shallow to deep and are on steep canyon sides, elevation of 7,000 to 8,000 feet. They are generally on southeast to southwest facing aspects. The average annual precipitation is 12 to 14 inches. Mean annual air temperature is 45 to 47 degrees F. and the freeze period is 80 to 120 days.

This unit is about 35 percent Travessilla soil on ridges and side slopes, about 30 percent rock outcrop and about 15 percent Strych soils in the draws and concave positions. Included in this unit is about 10 percent rubbleland and about 10 percent other soils including Podo, Datino, Sheepscan and a soil similiar to Travessilla with loam or clay loam textures over weathered shale.

The Travessilla soil is shallow over sandstone bedrock and it is well drained. The soil formed in residuum and colluvium from sandstone and limestone. Slopes are 50 to 75 percent and generally convex. Vegetation is dominantly pinyon pine, Utah juniper, curlleaf mountain mahogany, salina wildrye, Indian ricegrass, service berry and few Douglas fir.

In a typical profile the surface layer is brown very bouldery fine sandy loam about 2 inches thick. The substratum is light brown gravelly fine sandy loam about 9 inches thick and pink very cobbley fine sandy loam overlying sandstone bedrock at 14 inches.

Permeability is rapid, available water capacity is very low, about .6 to 1 inch. Organic matter content in the surface is low. Surface runoff is rapid and erosion hazard is very high. These soils are used for range, wildlife habitat and mining operations.

Taxonomic classification is loamy, mixed, (calcareous), mesic, Lithic Ustic Torriorthents.

A typical pedon of Travessilla very bouldery fine sandy loam, 50 to 75 percent slopes described 100 feet south and 250 feet east of the northwest corner of sec 25, T16.R7E.

A1 -- 0-2 inches; brown (7.5YR 5/2) very bouldery fine sandy loam, dark brown (7.5YR 4/2) when moist; weak medium platey structure; soft, very friable, slightly sticky, slighty plastic; common very fine, fine, medium and few coarse roots; 7 percent boulders, 10 percent cobbles, and 25 percent gravel; slightly calcareous; midly akaline (pH 7.8); abrupt smooth boundary.

C1 -- 2 to 11 inches; light brown (7.5 YR 6/4) gravelly fine sandy loam; strong brown (7.5 YR 5/6) when moist; weak fine subangular blocky structure; soft, very friable, slightly sticky, slightly plastic; common very fine, fine, medium and few coarse roots; 2 percent stones, 5 percent cobbles and 15 percent gravel; moderately calcareous; moderately alkaline (pH 8.2); abrupt wavy boundary.

C2 -- 11 to 14 inches; pink (7.5YR 7/4) very cobbley fine sandy loam; reddish yellow (7.5YR 6/6) moist; massive; soft; very friable, slightly sticky, slightly plastic; common very fine, fine, medium and coarse roots; 5 percent stones, 20 percent cobbles and 25 percent gravels; moderately calcareous, moderately alkaline (pH 8.2); abrupt irregular boundary.

R -- 14 inches sandstone bedrock.

Rock out crop is mostly exposed sandstone and limestone with some areas of shale and coal.

The Strych soil is deep and well drained. It is formed in colluvium and alluvium derived dominantly from sandstone and limestone. Typically the surface is grayish brown very stony loam about 4 inches thick. The subsoil is pale brown very cobbly loam about 4 inches thisk. The substratum is very pale brown very gravelly loam to 60 inches.

Permeability of the Strych soil is moderate. Availabile water capacity is about 7 inches to a depth of 60 inches. Organic matter content of the surface layer is about 2 to 3 percent. Effective rooting depth is about 60 inches. surface runoff is rapid and erosion hazard is high under native vegetation and very high if the vegetation is removed.

Taxonomic classification is loamy-skelatal, mixed, mesic Ustollic Calciorthid.

A typical pedon of Strych very bouldery loam, 50 to 75 percent slopes described 200 feet south, 300 feet cast of the northwest corner of section 25, T16S,R7E.

A -- 0 to 4 inches; grayish brown (10YR 5/2) very stony loam; dark grayish brown (10 YR 4/2), when moist; weak fine granular structure; soft, very friable, slightly sticky, slightly plastic; common very fine, fine, medium and few coarse roots; 10 percent boulders, 10 percent cobbles, 20 percent gravel; moderately calcareous; moderately alkaline (pH 8.0); abrupt wavy boundary.

BW -- 4 to 8 inches; pale brown (10YR 6/3) very cobbley loam, yellowish brown (10YR 5/4) when moist; weak fine subangular blocky structure; slightly hard, very friable,

slightly sticky, slightly plastic; common very fine, fine, medium and few coarse roots; 5 percent stones, 15 percent cobbles and 20 percent gravel; moderately clacareous; moderately alkaline (pH 8.0); clear wavy boundary.

BK -- 8 to 36 inches; very pale brown (10YR 8/3) very gravelly loam; light yellowish brown (10YR 6/4) when moist: weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky, plastic; common very fine, fine and few medium and coasre roots; 2 percent stones, 5 percent cobbles and 35 percent gravel; violently calcareous; moderately alkaline (pH 8.5); clear wavy boundary.

C -- 36 to 60 inches; very pale brown (10 YR 7/3) very gravelly loam; brown (10YR 5/3) when moist; massive; slightly hard; friable; slightly sticky, plastic; few very fine roots; 2 percent stones, 10 percent cobbles and 45 percent gravel; moderately calcareous; moderately alkaline (pH 8.4).

THE DATINO SERIES ARE VERY DEEP WELL DRAINED SOILS FORMED IN COLLUVIUM FROM SANDSTONE AND SHALE ON MOUNTAINSLOPES AND CANYON SIDESLOPES UNDER DOUGLAS-FIR, GAMBLE OAK, SNOWBERRY, SERVICEBERRY, AND SALINA WILDRYE. MAAT IS 38 TO 45 F., AAP IS 16 TO 20 INCHES, AND FFP IS 60 TO 100 DAYS. A TYPICAL PEDON HAS A BROWN EXTREMELY STONY FINE SANDY LOAM SURFACE LAYER ABOUT 9 INCHES THICK. THE SUBSOIL IS BROWN VERY STONY LOAM 7 INCHES THICK. THE SUBSTRATUM IS PALE BROWN VERY STONY FINE SANDY LOAM TO A DEPTH OF 60 INCHES OR MORE. SLOPES ARE 15 TO 80 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-9	STX-FSL, STV-L, GRV-L	GM-GC, SM-SC	A-2, A-4	15-75	60-80	55-75	40-70	20-55	20-30	5-10
0-9	IL	CL-ML	A-4	0	100	100	85-95	60-75	25-30	5-10
0-9	GR-FSL	SM, GM	A-4, A-2	5-10	65-85	60-75	40-60	25-40	20-25	NP-5
9-16	STV-L, CBV-L	GM-GC	A-4	25-40	60-70	55-65	50-60	35-50	20-30	5-10
16-60	CBV-L, STV-FSL	GM-GC, SM-SC	A-2, A-4	30-60	40-80	35-75	25-60	15-40	20-30	5-10

DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-9	15-20	1.25-1.35	0.6-6.0	0.06-0.09	7.4-7.8	-	LOW	.02	1	8	3-5	HIGH	MODERATE
0-9	22-25	1.20-1.30	0.6-2.0	0.16-0.18	7.4-7.8	-	LOW	.28	1	4L	3-5		
0-9	10-15	1.25-1.35	2.0-6.0	0.08-0.12	7.4-8.4	-	LOW	.15	3	8	3-5		
9-16	18-26	1.20-1.30	0.6-2.0	0.09-0.11	7.4-8.4	<2	LOW	.05					
16-60	16-25	1.30-1.45	0.6-6.0	0.06-0.10	7.4-8.4	<2	LOW	.05					

FLOODING FREQUENCY	FLOODING DURATION	FLOODING MONTHS	HIGH WATER TABLE DEPTH (FT)	HIGH WATER TABLE KIND	HIGH WATER TABLE MONTHS	CEMENTED PAN DEPTH (IN)	CEMENTED PAN HARDNESS	PEDROCK DEPTH (IN)	PEDROCK HARDNESS	SUBSIDENCE INIT. (IN)	SUBSIDENCE TOTAL (IN)	HYD GRP	POTENTIAL FROST ACTION
NONE			>6.0			-		>60		-	-	B	MODERATE

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	L,GR: SEVERE-SLOPE STX,STV,GRV: SEVERE-SLOPE,LARGE STONES
SEWAGE LAGOON AREAS	L,GR: SEVERE-SEEPAGE,SLOPE STX,STV,GRV: SEVERE-SEEPAGE,SLOPE, LARGE STONES
SANITARY LANDFILL (TRENCH)	SEVERE-SEEPAGE,SLOPE,LARGE STONES
SANITARY LANDFILL (AREA)	SEVERE-SEEPAGE,SLOPE
DAILY COVER FOR LANDFILL	POOR-SMALL STONES,SLOPE

CONSTRUCTION MATERIAL

ROADFILL	15-25% L,GR: FAIR-LARGE STONES,SLOPE 25+% L,GR: POOR-SLOPE 15-25% STX,STV,GRV: POOR-LARGE STONES 25+% STX,STV,GRV: POOR-LARGE STONES,SLOPE
SAND	IMPROBABLE-EXCESS FINES,LARGE STONES
GRAVEL	IMPROBABLE-EXCESS FINES,LARGE STONES
TOPSOIL	POOR-LARGE STONES,AREA RECLAIM,SLOPE

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-SEEPAGE,SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-LARGE STONES
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	LARGE STONES,DROUGHTY,SLOPE
TERRACES AND DIVERSIONS	SLOPE,LARGE STONES
GRASSED WATERWAYS	LARGE STONES,SLOPE,DROUGHTY

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	L,GR: SEVERE-SLOPE STX,STV,GRV: SEVERE-LARGE STONES,SLOPE
DWELLINGS WITHOUT BASEMENTS	L,GR: SEVERE-SLOPE STX,STV,GRV: SEVERE-SLOPE,LARGE STONES
DWELLINGS WITH BASEMENTS	L,GR: SEVERE-SLOPE STX,STV,GRV: SEVERE-SLOPE,LARGE STONES
SMALL COMMERCIAL BUILDINGS	L,GR: SEVERE-SLOPE STX,STV,GRV: SEVERE-SLOPE,LARGE STONES
LOCAL ROADS AND STREETS	L,GR: SEVERE-SLOPE STX,STV,GRV: SEVERE-SLOPE,LARGE STONES
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	L,GR: SEVERE-SLOPE STX,STV,GRV: SEVERE-LARGE STONES,SLOPE

REGIONAL INTERPRETATIONS

ALRA(S): 47
REV. MMS-JMD. 3-86

PODO SERIES
STONY

LITHIC USTORTHENTS, LOAMY, MIXED (CALCAREOUS), FRIGID

PODO STONY ARE SHALLOW SOMEWHAT EXCESSIVELY DRAINED SOILS FORMED IN SANDSTONE AND LIMESTONE ON MOUNTAIN SLOPES UNDER BLUE GRAMA, INDIAN RICEGRASS, BITTERBRUSH, MANZANITA, PINE AND FIR. MAAT IS 42 TO 45 F. AAP IS 16 TO 20 INCHES. FFP IS 70 TO 90 DAYS. A TYPICAL PROFILE HAS A DARK BROWN VERY STONY SANDY LOAM SURFACE LAYER 6 INCHES THICK. THE UNDERLYING AYER IS GRAVELLY AND COBBLY, SANDY LOAM UNDERLAIN AT 20 INCHES BY BEDROCK. SLOPES RANGE FROM 10 TO 70 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-6	STV-SL	SM	A-2, A-1	15-45	85-85	60-80	40-60	20-30	20-30	NP-5
0-6	CN-SL, GR-SL	SM, GM	A-1	0-10	60-70	55-65	30-40	15-25	-	NP
0-6	GRV-L	GM-GC	A-2, A-4	10-15	45-55	40-50	35-50	25-40	25-35	5-10
6-15	GR-SL, CB-SL, GR-SCL	SM-SC	A-2, A-4	10-30	75-85	70-80	50-70	30-40	25-35	5-10
15-19	GR-L, GR-CL	GC	A-4, A-6	0	55-65	50-60	40-60	35-50	30-40	5-15
19	UWR									

DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	EROSION FACTORS T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CORROSIVITY CONCRETE
0-6	10-15	1.35-1.40	2.0-6.0	0.06-0.08	7.9-8.4	<2	LOW	.05	1	8	.5-1	HIGH	MODERATE
0-6	10-15	1.35-1.40	2.0-6.0	0.07-0.08	8.5-9.0	<2	LOW	.10	1	8	.5-1		
0-6	15-25	1.25-1.30	2.0-6.0	0.10-0.12	8.5-9.0	<2	LOW	.17	1	8	.5-1		
6-15	10-25	1.30-1.40	2.0-6.0	0.08-0.12	7.9-8.4	<2	LOW	.24					
15-19	15-35	1.25-1.30	2.0-6.0	0.10-0.13	7.9-9.0	<2	LOW	.17					
19													

FLOODING FREQUENCY	FLOODING DURATION	FLOODING MONTHS	HIGH WATER TABLE DEPTH (FT)	HIGH WATER TABLE KIND	HIGH WATER TABLE MONTHS	CEMENTED PAN DEPTH (IN)	CEMENTED PAN HARDNESS	BEDROCK DEPTH (IN)	BEDROCK HARDNESS	SUBSIDENCE INIT. (IN)	SUBSIDENCE TOTAL (IN)	HYDRO GRP	POTENTIAL FROST ACTION
NONE			>6.0			-		10-20	HARD	-	-	D	MODERATE

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	10-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
SEWAGE LAGOON AREAS	SEVERE-SEEPAGE,DEPTH TO ROCK,SLOPE
SANITARY LANDFILL (TRENCH)	10-15%: SEVERE-DEPTH TO ROCK,SEEPAGE 15+%: SEVERE-DEPTH TO ROCK,SEEPAGE,SLOPE
SANITARY LANDFILL (AREA)	10-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
DAILY COVER FOR LANDFILL	10-15%: POOR-DEPTH TO ROCK,LARGE STONES 15+%: POOR-DEPTH TO ROCK,LARGE STONES,SLOPE

CONSTRUCTION MATERIAL

ROADFILL	10-25%: POOR-DEPTH TO ROCK 25+%: POOR-DEPTH TO ROCK,SLOPE
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	10-15%: POOR-DEPTH TO ROCK,SMALL STONES 15+%: POOR-DEPTH TO ROCK,SMALL STONES,SLOPE

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-DEPTH TO ROCK,SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-THIN LAYER
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	CN,GR,GRV: SLOPE,DROUGHTY STV: SLOPE,LARGE STONES,DROUGHTY
TERRACES AND DIVERSIONS	SLOPE,LARGE STONES,DEPTH TO ROCK
GRASSED WATERWAYS	LARGE STONES,SLOPE,DROUGHTY

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	10-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
DWELLINGS WITHOUT BASEMENTS	10-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-SLOPE,DEPTH TO ROCK
DWELLINGS WITH BASEMENTS	10-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
SMALL COMMERCIAL BUILDINGS	SEVERE-SLOPE,DEPTH TO ROCK
LOCAL ROADS AND STREETS	10-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	10-15% STV,CN,GR: SEVERE-DEPTH TO ROCK 15+% STV,CN,GR: SEVERE-SLOPE,DEPTH TO ROCK 10-15%GRV: SEVERE-SMALL STONES,DEPTH TO ROCK 15+% GRV: SEVERE-SMALL STONES,SLOPE, DEPTH TO ROCK

REGIONAL INTERPRETATIONS

; 5&(5): 29, 35
; 0.CDF, 12-FF
; TOLLIC CALCIORTHIDS, LOAMY-SKELETAL, MIXED, MESIC

STRYCH SERIES
HIGH ELEVATION

...E STRYCH SERIES ARE VERY DEEP, WELL DRAINED SOILS FORMED IN ALLUVIUM AND COLLUVIUM ON HILLSIDES AND MOUNTAINSIDES ...ER UTAH JUNIPER PINYON. MAAT IS 45 TO 50 DEGREES F., AAP IS 12 TO 14 INCHES, FFS IS 100 TO 150 DAYS. TYPICALLY THE ...ACE IS REDDISH BROWN EXTREMELY BOULDERY FINE SANDY LOAM 8 INCHES THICK. THE UNDERLYING MATERIAL IS YELLOWISH RED AND ...SH YELLOW VERY STONY FINE SANDY LOAM AND EXTREMELY STONY FINE SANDY LOAM TO A DEPTH OF 60 INCHES OR MORE. SLOPES ...E FROM 20 TO 70 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-8	EYX-FSL, STX-FSL	SM-SC, SM	A-2, A-4	40-80	65-90	60-80	50-75	25-50	20-30	NP-10
8-60	STV-FSL, CBV-FSL	SM-SC, GM-GC	A-2, A-4	30-50	45-75	40-70	30-70	20-45	20-30	NP-10
	STV-FSL, STX-FSL, CBV	SM-SC, GM-GC	A-2, A-4	30-50	45-75	40-70	30-70	20-45	20-30	5-10

DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CORROSIVITY CONCRETE
0-8	8-18	1.20-1.45	2.0-6.0	0.06-0.11	7.4-8.4	-	LOW	.20	5	F	1-3	HIGH	MODERATE
8-60	8-18	1.20-1.45	2.0-6.0	0.06-0.11	7.4-8.4	-	LOW	.20	5	8	1-2		
	14-18	1.20-1.45	2.0-6.0	0.06-0.11	7.4-9.0	<2	LOW	.20					

FLOODING			HIGH WATER TABLE			CEMENTED PAN		PERCOCK		SUBSIDENCE		HYDROPOTENTIAL
FREQUENCY	DURATION	MONTHS	DEPTH (FT)	KIND	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INIT (IN)	TOTAL (IN)	GPP	FROST ACTION
NONE			>6.0					>60		-	-		MODERATE

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	STV, CBV: SEVERE-SLOPE EYX, STX: SEVERE-SLOPE, LARGE STONES
SEWAGE LAGOON AREAS	SEVERE-SEEPAGE, SLOPE, LARGE STONES
SANITARY LANDFILL (TRENCH)	SEVERE-SLOPE, LARGE STONES
SANITARY LANDFILL (AREA)	SEVERE-SLOPE
DAILY COVER FOR LANDFILL	POOR-SMALL STONES, SLOPE

CONSTRUCTION MATERIAL

ROADFILL	20-25% STV, CBV: FAIR-LARGE STONES, SLOPE 25+% STV, CBV: POOR-SLOPE 20-25% EYX, STX: POOR-LARGE STONES 25+% EYX, STX: POOR-LARGE STONES, SLOPE
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-SMALL STONES, AREA RECLAIM, SLOPE

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-SEEPAGE, SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-LARGE STONES
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	SLOPE, LARGE STONES, DROUGHTY
TERRACES AND DIVERSIONS	SLOPE, LARGE STONES
GRASSED WATERWAYS	TOO ARID, LARGE STONES, SLOPE

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	STV, CBV: SEVERE-SLOPE EYX, STX: SEVERE-LARGE STONES, SLOPE
DWELLINGS WITHOUT BASEMENTS	STV, CBV: SEVERE-SLOPE EYX, STX: SEVERE-SLOPE, LARGE STONES
DWELLINGS WITH BASEMENTS	STV, CBV: SEVERE-SLOPE EYX, STX: SEVERE-SLOPE, LARGE STONES
SMALL COMMERCIAL BUILDINGS	STV, CBV: SEVERE-SLOPE EYX, STX: SEVERE-SLOPE, LARGE STONES
LOCAL ROADS AND STREETS	STV, CBV: SEVERE-SLOPE EYX, STX: SEVERE-SLOPE, LARGE STONES
PARKS, PLAYING FIELDS AND GOLF FAIRWAYS	EYX, STX: SEVERE-LARGE STONES, SLOPE STV, CBV: SEVERE-SMALL STONES, LARGE STONES, SLOPE

REGIONAL INTERPRETATIONS

(LRAES): 34, 47
REV. JMD, 3-83
(YPIC USTORTHENTS, FINE-LOAMY, MIXED (CALCAREOUS), FRIGID

THE SHEEPCAN SERIES CONSISTS OF VERY DEEP, WELL DRAINED SOILS THAT FORMED IN COLLUVIUM FROM SEDIMENTARY ROCKS ON MOUNTAIN SLOPES UNDER SALINA WILDRYE, BIG SAGEBRUSH, RUBBER RABBITBRUSH, BLUEBUNCH WHEATGRASS, AND SNOWBERRY. MAST IS 38 41F. AAP IS 16 TO 18 INCHES. FFP IS 70 TO 85 DAYS. A TYPICAL PROFILE HAS A LIGHT BROWNISH GRAY GRAVELLY LOAM SURFACE YER 9 INCHES THICK. THE UNDERLYING LAYER IS LIGHT GRAY AND PALE YELLOW GRAVELLY AND COBBLY CLAY LOAM 19 INCHES THICK. E NEXT LAYER IS WHITE VERY COBBLY CLAY LOAM TO 60 INCHES OR MORE. SLOPES ARE 5 TO 30 PERCENT.

ESTIMATED SOIL PROPERTIES (A)

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-9	GR-L	CL-ML, GM-GC, SM-SC	A-4	0-10	70-80	65-75	60-70	40-60	25-30	5-10
0-9	ST-L	CL-ML, SM-SC	A-4	15-30	75-85	70-80	60-75	40-60	25-35	5-10
9-28	GR-CL, CB-CL	CL	A-6	5-30	70-80	65-75	60-70	50-55	30-40	10-20
28-60	CBV-CL	GC	A-6	30-40	55-65	50-65	45-60	35-50	30-40	10-20

DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	EROSION FACTORS T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CORROSIVITY CONCRETE
0-9	22-25	1.35-1.45	0.2-0.6	0.12-0.14	7.9-8.4	<2	LOW	.17	5	8	1-3	HIGH	MODERATE
0-9	23-25	1.35-1.45	0.2-0.6	0.11-0.13	7.9-8.4	<2	LOW	.15	5	8	1-3		
9-28	28-35	1.30-1.40	0.2-0.6	0.12-0.14	8.5-9.0	<2	MODERATE	.17					
28-60	28-35	1.30-1.40	0.2-0.6	0.09-0.11	7.9-9.0	<2	LOW	.10					

FLOODING FREQUENCY	FLOODING DURATION	FLOODING MONTHS	HIGH WATER TABLE DEPTH (FT)	HIGH WATER TABLE KIND	HIGH WATER TABLE MONTHS	CEMENTED PAN DEPTH (IN)	CEMENTED PAN HARDNESS	BEDROCK DEPTH (IN)	BEDROCK HARDNESS	SUBSIDENCE INIT. (IN)	SUBSIDENCE TOTAL (IN)	HYD GRP	POTENTIAL FROST ACTION
NONE			>6.0			-		>60		-	-	B	MODERATE

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	SEVERE-PERCS SLOWLY,
SEWAGE LAGOON AREAS	SEVERE-SLOPE
SANITARY LANDFILL (TRENCH)	GR: SEVERE-SLOPE ST: SEVERE-SLOPE, LARGE STONES
SANITARY LANDFILL (AREA)	SEVERE-SLOPE
DAILY COVER FOR LANDFILL	POOR-SMALL STONES,

CONSTRUCTION MATERIAL

ROADFILL	5-25%: FAIR-LARGE STONES, SLOPE 25+%: POOR-SLOPE
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-SMALL STONES, AREA RECLAIM,

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	SEVERE-SLOPE >15%
DWELLINGS WITHOUT BASEMENTS	SEVERE-SLOPE >15%
DWELLINGS WITH BASEMENTS	SEVERE-SLOPE >15%
SMALL COMMERCIAL BUILDINGS	SEVERE-SLOPE
LOCAL ROADS AND STREETS	SEVERE-SLOPE >15%
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	SEVERE-SLOPE >15%

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-SLOPE
EMBANKMENTS, DIKES AND LEVEES	MODERATE-LARGE STONES
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	LARGE STONES, SLOPE
TERRACES AND DIVERSIONS	SLOPE, LARGE STONES
GRASSED WATERWAYS	LARGE STONES, SLOPE

REGIONAL INTERPRETATIONS

"LRA(S)": 47
JWB:JMD, 2-82
TYPIC USTIFLUVENTS, LOAMY-SKELETAL, MIXED (CALCAREOUS), FRIGID

WINETTI SERIES
POULDERY

THE WINETTI SERIES IS VERY DEEP, WELL DRAINED SOIL FORMED IN ALLUVIUM FROM SANDSTONE AND SHALE ON NARROW VALLEY FLOORS UNDER BASIN SHRUBS AND GRASSES. MAAT IS 43 TO 45F. AAP IS 12 TO 16 INCHES. FFP IS 80 TO 100 DAYS. TYPICALLY THE SURFACE LAYER IS GRAYISH BROWN BOULDERY SANDY LOAM ABOUT 6 INCHES THICK. THE UNDERLYING LAYER IS PALE BROWN LOAM 5 INCHES THICK. THE NEXT LAYER IS PALE BROWN AND BROWN VERY BOULDERY LOAM ABOUT 23 INCHES THICK. THE NEXT LAYER TO A DEPTH OF 60 INCHES IS PALE BROWN VERY GRAVELLY SANDY LOAM. SLOPES ARE 1 TO 8 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-6	BY-SL	SM	A-2, A-4	35-45	95-100	90-100	55-70	30-40	20-25	NP-5
6-11	L	CL-ML, ML	A-4	0	90-100	85-95	70-90	55-70	20-30	NP-10
11-34	PYV-L	CL-ML, ML	A-4	40-45	75-85	70-80	60-70	45-55	20-30	NP-10
34-60	CRV-SL	GM-GC, GM	A-2	15-20	40-50	35-45	20-30	15-20	20-30	NP-10

DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-6	8-13	1.30-1.40	2.0-6.0	0.06-0.08	7.4-7.8	<2	LOW	.15	2	8	1-3	HIGH	MODERATE
6-11	10-17	1.20-1.30	2.0-6.0	0.15-0.17	7.9-8.4	<2	LOW	.37					
11-34	10-17	1.20-1.30	2.0-6.0	0.08-0.10	7.9-8.4	<2	LOW	.10					
34-60	10-16	1.30-1.40	2.0-6.0	0.05-0.07	7.9-8.4	<2	LOW	.10					

FLOODING FREQUENCY	FLOODING DURATION	HIGH WATER TABLE DEPTH (FT)	HIGH WATER TABLE KIND	HIGH WATER TABLE MONTHS	CEMENTED PAN DEPTH (IN)	CEMENTED PAN HARDNESS	BEDROCK DEPTH (IN)	BEDROCK HARDNESS	SUBSIDENCE INIT. (IN)	SUBSIDENCE TOTAL (IN)	HYDROLOGIC GRP	POTENTIAL FROST ACTION
RARE		>6.0					>60					MODERATE

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	MODERATE-FLOODING, LARGE STONES
SEWAGE LAGOON AREAS	1-7%: SEVERE-SEEPAGE, FLOODING 7+%: SEVERE-SEEPAGE, FLOODING, SLOPE
SANITARY LANDFILL (TRENCH)	SEVERE-SEEPAGE
SANITARY LANDFILL (AREA)	SEVERE-SEEPAGE
DAILY COVER FOR LANDFILL	POOR-SMALL STONES

CONSTRUCTION MATERIAL

ROADFILL	FAIR-LARGE STONES
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	POOR-LARGE STONES, AREA RECLAIM

WATER MANAGEMENT

POND RESERVOIR AREA	SEVERE-SEEPAGE
EMBANKMENTS DIKES AND LEVEES	SEVERE-SEEPAGE, LARGE STONES
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	1-3%: LARGE STONES, DROUGHTY 3+%: LARGE STONES, DROUGHTY, SLOPE
TERRACES AND DIVERSIONS	LARGE STONES, ERODES EASILY
GRASSED WATERWAYS	LARGE STONES, ERODES EASILY, DROUGHTY

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	MODERATE-LARGE STONES
DWELLINGS WITHOUT BASEMENTS	SEVERE-FLOODING
DWELLINGS WITH BASEMENTS	SEVERE-FLOODING
SMALL COMMERCIAL BUILDINGS	SEVERE-FLOODING
LOCAL ROADS AND STREETS	MODERATE-FLOODING, FROST ACTION, LARGE STONES
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	SEVERE-LARGE STONES

REGIONAL INTERPRETATIONS

...RV. CO.,ND. 6-...
LITHIC USTIC TORRIORTHENTS, LOAMY, MIXED (CALCAREOUS), MESIC

THE TRAVESSILLA SERIES ARE SHALLOW WELL DRAINED SOILS FORMED IN RESIDUUM AND COLLUVIUM FROM SANDSTONE AND SILTSTONE ON BENCHES, MESAS AND CANYON SIDESLOPES UNDER PINYON AND JUNIPER. MAAT IS 45 TO 47 F., MAP IS 12 TO 14 INCHES, AND FFP IS 90 TO 120 DAYS. A TYPICAL PROFILE HAS A BROWN SANDY LOAM SURFACE LAYER 3 INCHES THICK. THE UNDERLYING MATERIAL IS BROWN OR LIGHT BROWN LOAM OVER SANDSTONE AT A DEPTH OF 17 INCHES. SLOPES RANGE FROM 1 TO 80 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-3	SL, FSL, FL-SL	SM-SC	A-2, A-4	0-10	90-100	85-100	55-80	30-40	20-25	5-10
0-3	GRV-FSL	GM-GC	A-1, A-2	0-5	35-45	30-40	25-35	10-20	20-25	5-10
0-3	BYX-L	GM-GC	A-2	55-65	40-50	35-45	30-40	25-30	20-25	5-10
3-17	L, VFSL, FSL	CL-ML, SM-SC	A-4	0-5	90-100	70-100	60-80	45-65	20-25	5-10
17	UWB									

DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-3	10-16	1.30-1.40	2.0-6.0	0.11-0.15	7.4-7.8	-	LOW	.24	1	3	1-2	HIGH	LOW
0-3	12-18	1.30-1.40	2.0-6.0	0.06-0.08	7.4-7.8	-	LOW	.10	1	6	1-2		
0-3	15-18	1.15-1.25	0.6-2.0	0.06-0.08	7.9-8.4	<2	LOW	.05	1	8	1-2		
3-17	8-18	1.30-1.40	0.6-6.0	0.13-0.16	7.4-8.4	<2	LOW	.37					
17													

FLOODING FREQUENCY	FLOODING DURATION	HIGH WATER TABLE DEPTH (FT)	HIGH WATER TABLE KIND	HIGH WATER TABLE MONTHS	CEMENTED PAN DEPTH (IN)	CEMENTED PAN HARDNESS	BEDROCK DEPTH (IN)	BEDROCK HARDNESS	SUBSIDENCE INIT. (IN)	SUBSIDENCE TOTAL (IN)	HYDROLOGIC GRP	POTENTIAL FROST ACTION
NONE		25.0			-		6-20	HARD	-		C	MODERATE

SANITARY FACILITIES

SEPTIC TANK ABSORPTION FIELDS	1-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
SEWAGE LAGOON AREAS	1-7%: SEVERE-SEEPAGE,DEPTH TO ROCK 7+%: SEVERE-SEEPAGE,DEPTH TO ROCK,SLOPE
SANITARY LANDFILL (TRENCH)	1-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
SANITARY LANDFILL (AREA)	1-8%: SLIGHT 8-15%: MODERATE-SLOPE 15+%: SEVERE-SLOPE
DAILY COVER FOR LANDFILL	1-15%: POOR-DEPTH TO ROCK 15+%: POOR-DEPTH TO ROCK,SLOPE

CONSTRUCTION MATERIAL

ROADFILL	1-25%: POOR-DEPTH TO ROCK 25+%: POOR-DEPTH TO ROCK,SLOPE
SAND	IMPROBABLE-EXCESS FINES
GRAVEL	IMPROBABLE-EXCESS FINES
TOPSOIL	1-15%: POOR-DEPTH TO ROCK,SMALL STONES 15+%: POOR-DEPTH TO ROCK,SMALL STONES,SLOPE

WATER MANAGEMENT

POND RESERVOIR AREA	1-8%: SEVERE-DEPTH TO ROCK 8+%: SEVERE-DEPTH TO ROCK,SLOPE
EMBANKMENTS DIKES AND LEVEES	SEVERE-PIPING
EXCAVATED PONDS AQUIFER FED	SEVERE-NO WATER
DRAINAGE	DEEP TO WATER
IRRIGATION	1-3% GRV-FSL,BYX-L: DEPTH TO ROCK 3+% GRV-FSL,BYX-L: SLOPE,DEPTH TO ROCK 1-3%SL,FSL,FL-SL: SOIL BLOWING,DEPTH TO ROCK 3+% SL,FSL,FL-SL: SLOPE,SOIL BLOWING, DEPTH TO ROCK
TERRACES AND DIVERSIONS	1-8% SL,FSL,FL,GRV: DEPTH TO ROCK 8+% SL,FSL,FL,GRV: SLOPE,DEPTH TO ROCK 1-8% BYX: LARGE STONES,DEPTH TO ROCK 8+% BYX: SLOPE,LARGE STONES,DEPTH TO ROCK
GRASSED WATERWAYS	1-8% SL,FSL,FL,GRV: TOO ARID 8+% SL,FSL,FL,GRV: TOO ARID,SLOPE 1-8% BYX: TOO ARID,LARGE STONES 8+% BYX: TOO ARID,LARGE STONES,SLOPE

BUILDING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	1-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
DWELLINGS WITHOUT BASEMENTS	1-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-SLOPE,DEPTH TO ROCK
DWELLINGS WITH BASEMENTS	1-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
SMALL COMMERCIAL BUILDINGS	1-8%: SEVERE-DEPTH TO ROCK 8+%: SEVERE-SLOPE,DEPTH TO ROCK
LOCAL ROADS AND STREETS	1-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-DEPTH TO ROCK,SLOPE
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	SL,FSL,FL,GRV: SEVERE-DEPTH TO ROCK BYX: SEVERE-LARGE STONES,DEPTH TO ROCK

REGIONAL INTERPRETATIONS